REMARKS/ARGUMENTS

The Examiner is thanked for the review of the application.

Claims 1-19 remain in this application. Claims 1, 2, 4, 10, 11, 12, 13, and 19 have been amended. Claim 20 has been previously cancelled without prejudice or disclaimer of the subject matter therein. No new matter has been added.

In the Office Action dated December 23, 2005, the Examiner has rejected Claims 1 and 11 under 35 U.S.C. 102(b) as being anticipated by Damian et al. (US 5,212,791).

Regarding Claims 1 and 11 the Examiner has stated that "Damian et al. discloses: computer readable code for storing a plurality of rules/storing a plurality of rules, (col. 107, lines 37-42, shows memory for string the set of rules, w/ col. 9, lines 63-64, shows hard coded rules applied); computer readable code for allowing the prioritization of the plurality of rules/allowing the prioritization of the plurality of rules, (col. 10, line 5, line 15, lines 40-41, shows low, medium and high priority rules respectively); and computer readable code for relaxing at least one lower priority rule to allow a higher priority rule to become feasible/relaxing at least one lower priority rule to allow a higher priority rule to become feasible, (Col. 5, lines 30-34, attaining feasible schedules, w/ col. 108, lines 37-46, lowering error counts [medium rules] to alter disposition rules [high priority rules] thereby relaxing rules to make schedule more feasible); and computer readable code for computing the preferred set of prices wherein the preferred set of prices meets the plurality of rules, (Col. 5, lines 35 – 38, shows that cost benefits of one schedule over another are determined, where the cost of making the schedule that has benefits represents the preferred set of prices, in this case, the system is a rule based scheduling system, therefore any parameter considered when determining a schedule must meet rules used to determine the schedule, which in this case are the prices);"

Claims 1 and 11 have been amended to recite, in pertinent part: <u>performing an optimization process to generate the preferred set of prices wherein the preferred set of prices meets the plurality of rules wherein a rule is feasible if said optimization process can be performed without violating said rule, further wherein the preferred set of prices is a set of product prices generated for said plurality of products.</u>" (emphasis added).

Damian '791 does not disclose <u>computing a preferred set of prices</u>. As noted above, Claims 1 and 11 have been amended to more clearly limit the instant invention to the field of optimizing prices in an enterprise pricing environment. The instant amendments specifically delineate the elements of generating a preferred set of product prices for a plurality of products.

Damian '791 relates to production scheduling and "more particularly to a technique for employing a knowledge base system to dynamically schedule production of parts on a plurality of manufacturing machines." (Col. 1, lines 11 – 14). In particular, the invention is "a method for operating a computer system to generate schedules for a plurality of orders." (Col 2, lines 23 – 24; and Col. 107, lines 37 – 38). While cost benefits of one schedule over another are determined, there is no disclosure anywhere in Damian et al '791 of method or apparatus for <u>computing a preferred set of prices.</u>

In fact, there is no disclosure regarding pricing at all in the cited reference. Costs are not prices. Determining the cost benefits of one schedule over another is unrelated to optimizing a set of product prices in an enterprise pricing environment. Claims 1 and 11 as amended recite a "<u>computing a preferred set of prices wherein the preferred set of prices is a set of product prices generated for said plurality of products</u>" limitation. The pricing element expressly delineated in the claims as amended is not disclosed in Damian '791 and, as such, the reference does not anticipate the instant invention.

The Examiner has also rejected Claims 2-4, 10, 12, 13 and 19 under 35 U.S.C. 103(a) as being unpatentable over Damien et al. (5,212,791) as applied to claim 1 above, and further in view of Ouimet et al., (US 6,094,641).

Regarding Claim 2 and 12, the Examiner has stated that "Damian et al. fails to disclose the following, but does disclose a production scheduling system that implements dynamic scheduling for products in the abstract, lines 1-5. However, Ouimet et al. discloses: an econometric engine for modeling sales as a function of price to create a sales model/creating a sales model, (Col. 4, lines 35-44, [demand model gives predicted sales of an item based on price]); a financial model engine for modeling costs to create a cost model/creating a cost model, wherein the generating a preferred set of prices uses information from the creation of the sales model and the creation of the cost model, (col. 4, lines 52-53, [pricing model], which includes an activity-based costing module, Col. 2, lines 1-12, including visibility, and taking the promotional cost into account when modifying the demand model, in this case, the module is inherent with Ouimet since Ouimet's system is computer-implemented and in order to create models, a module is necessary in a computerized system); and wherein the optimization engine is coupled to the econometric engine and financial model engine to receive input from the econometric engine and financial model engine, wherein the optimization engine generates the preferred set of prices, (Col. 5, lines 45-48, [using fitted, modified demand model to determine price that will maximize profits, {optimization}]). Ouimet et al. discloses this limitation in analogous art for the purpose of showing how products can be implemented in models. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement an econometric engine, a financial model engine and an optimization engine with the motivation of ultimately optimizing prices".

Claim 2 has been amended to recite "an econometric engine for modeling sales as a function of price to create a sales model wherein said econometric engine clusters said plurality of products into demand groups of related products whereby each said demand group is made up of highly substitutable related products, further wherein said sales model models demand group sales;"

(emphasis added). Similarly, Claim 12 has been amended to recite "<u>clustering said plurality of products into demand groups of related products whereby each said demand group is made up of highly substitutable related products, further wherein said sales model models demand group sales</u>" (emphasis added).

The instant amendments to claims 2 and 12 add the limitation defining the "demand groups" of the instant invention. The demand groups of the instant invention are <u>groups of highly substitutable products</u> (or items). (Specification, page 62, lines 14-15). The instant invention discloses creating a sales model to model sales for said demand groups as a function of price.

The sales model of the instant invention which <u>models sales as a function of price</u> is not analogous to the demand model taught in Ouimet et al. In Ouimet et al., the "demand model" is the model used to predict consumer demand for a particular item (Col. 3, lines 55-57). As noted above, the demand groups of the instant invention, on the other hand, are groups of highly substitutable products (or items). An initial data set is used to group highly substitutable products into demand groups. Then a sales model, <u>which models sales as a function of price</u> is created for each demand group (Specification, page 98, line 19 to page 99, line 1). Later, the sales model, in combination with a market share model, is used to predict consumer demand (page 99, lines 5 – 7).

Ouimet et al. does not teach nor suggest <u>a sales model which models sales as a function of price for a demand group</u>. The "demand model" disclosed by Ouimet et al. is used to predict consumer demand for a particular item, not to predict sales as a function of price. It would not have been obvious at the time of the instant invention for one skilled in the art to create a sales model which models sales as a function of price in order to generate the demand model disclosed in Ouimet et al.

Furthermore, Ouimet et al. does not teach nor suggest <u>grouping a plurality of highly substitutable products into demand groups</u> which can then be used in a sales model to predict

demand for the entire group. In Ouimet et al., a system of coupled equations is used to describe the demand for each item (or product) in a given group. The instant invention may advantageously be used to group highly substitutable products into demand groups to help solve the problem, inter alia, of forecasting demand for large numbers of products which are interrelated. Claims 2 and 12, as amended, clearly direct the instant invention to generating a sales model for a demand group as a function of price.

Ouimet et al. does not teach nor suggest grouping a plurality of highly substitutable products into demand groups which can then be used in a sales model which models sales as a function of price. Hence Claims 2 and 12 are allowable over Ouimet '641.

The present invention teaches that "financial model engine 108 should be flexible enough to provide a cost model for different procedures. These different costs may have variable cost components where the cost of an item is a function of the amount of sales of the item and fixed cost components where the cost of an item is not a function of the amount of sales of the item" (see specification, page 74, line 22 to page 75, line 3). In the instant invention, the stores may only need to supply labor costs of the stores and distribution centers, costs of capital, size of and item and number of items in a case to allow a cost modeling (see specification, page 75, lines 9 -12). This invention is advantageous because by using "these estimations, costs may be more easily calculated on a store level . . . [and] allows the maximization of profits fore each store (see specification, page 75, lines 18 -19).

The instant costing model takes information from specific products in specific stores to calculate the total cost of said product. As noted above, the costing model is configured to receive information regarding labor costs, stocking time, transportation costs and the like. This information is used to compute the cost contribution of each costing activity associated with each product at a particular store. Costs associated with, for instance, stocking costs at a distribution center,

transportation costs, receiving costs, inventory costs, labor costs, bag costs, checkout costs, and invoice related costs are computed and used to determine the total cost for a particular product (see specification, page 96, lines 5 – 19). The costing model may use data from specific stores, as well as industry data to provide standard estimates of common parameters (see specification page 75, lines 6 – 7). In this way, the instant costing model is able to incorporate all relevant costing activities in order to give a total cost of a product.

Ouimet '641 teaches the concept of "visibility which is defined as the amount by which the demand for an item is increased when a given promotion is run. Associated with each promotion is a visibility, which in general can be determined from empirical study, and a promotion cost, i.e., the amount of money spent on the promotion. By including the visibility in the demand model and also taking into account the promotional cost, the pricing and promotional decisions can be optimized together such that an optimized maximum profit can be obtained" (Col. 2, lines 3 -12).

Promotional cost as defined by Ouimet '641 refers to "the amount of money spent on the promotion". In contrast, the activity-based costing as recited in Claims 2 and 12 include all of the costing activities noted above. Therefore, promotional cost is inadequate in quantifying the true cost and therefore the true profitability. In addition, as recited by Claims 2 and 12, activity-based costing provides a flexible means of accounting for any and all costs related with a particular product. These calculations of activity-based costing go above and beyond the promotional costs as disclosed by Ouimet '641. Hence, the instant claims are allowable over the cited art.

With respect to optimizing the preferred set of prices, Ouimet '641 discloses rule-based pricing systems to contrast them with model based pricing systems (col. 1, lines 30 – 34). These rule-based systems do not optimize the decision to maximize an objective such as profit or revenue, but work instead by activating a set of pre-defined rules to generate an action. The instant optimization is not comparable to these rule-based systems. The optimization in Claims 2 and 12 consists of a mechanism by which business rules that govern strategy can be included in the

optimization. These rules ensure that the preferred set of prices actually conforms to the business strategy, and this capability significantly enhances model based pricing systems by making their recommendations practical and actionable. (See specification, page 97, lines 12 – 14).

In the instant invention, constraints limit the sets of preferred prices that are deemed acceptable by a pricing analyst or a category manager and the optimization routines must deliver prices that conform to them. The rule based systems disclosed in Ouimet et al., on the other hand, specify a recipe for responding to specific stimuli like competitor price changes, etc. They specify rule of action rules rather than rules that define business strategy. Hence, as amended, Claims 2 and 12 are allowable over Ouimet '641.

Regarding Claims 4, 10, 13, 19 the Examiner has stated that "Damian et al. discloses: computer readable code for determining a priority of a rule determined to be infeasible/determining a priority of a rule determined to be infeasible,/<u>determining the lowest priority infeasible rule</u> (Col. 5, lines 46-47, using computer scheduler to determine when no feasible outcome is available, col. 6, lines 21-31, shows lowest leveling hierarchy maintains the up-to-date status of each production resource, w/col. 108, lines 21-24, shows process is repeated to find feasible outcome, therefore the lowest level in the hierarch is repeatedly used to find feasible outcome); computer readable code for determining a lowest priority infeasible rule, (Col. 10, lines 5-8, shows an example of when a low priority rule becomes active, it picks a "child" schedule just generated and uses it as a "parent" to generate further children, therefore the determination of the lowest priority rule is obvious since further children schedules are produced which are of lower priorities of the already low priority "parent" schedule, and order to produce a lower priority schedule, the lowest priority schedule must be known in order for production to take place).;computer readable code for <u>determining if at least one rule with a lower priority than the priority of the rule determined to be infeasible may be relaxed to allow the rule determined to be infeasible to become feasible</u>; and computer readable code for relaxing at least one rule with a lower priority than the priority of the rule determined to be infeasible to allow the rule determined to be infeasible to become feasible/determining if at least one

rule with a lower priority than the priority of the rule determined to be infeasible/lowest priority infeasible rule may be relaxed to allow the rule determined to be infeasible to become feasible; relaxing at least one rule with a lower priority than the priority of the rule determined to be infeasible/lowest priority infeasible rule to allow the rule determined to be infeasible to become feasible, (col. 5, lines 47-48, easing constraints until acceptable outcome is obtained)." (emphasis added).

Damian '791 does not disclose nor suggest incrementally relaxing rules in order to allow a rule to become feasible. Damian simply replaces unworkable schedules with workable schedules on a hierarchical basis. Even if schedules are considered to be rules, Applicants respectfully submit that replacing a schedule, i.e., eliminating it and replacing it with another, is very different from **"incrementally relaxing** any infeasible rule of the plurality of rules which has a lower priority than the at least one lower priority infeasible rule to allow the at least one lower priority inflexible rule to become feasible" as recited by Claims 4, 10, 13 and 19 (emphasis added). Rule relaxation of the present invention is described in detail from page 124 to page 125 of the specification. In addition, rules are relaxed incrementally and in accordance with their priority and not in a random manner (see specifically page 125, lines 10-20). Accordingly, the process of incrementally relaxing lower priority rules in a systematic manner until a desired result is obtained is far superior to simply ignoring/eliminating schedules on a hierarchical basis.

Furthermore, Damian '791 discloses replacing unworkable schedules with workable schedules as discussed above. The instant invention, on the other hand, incrementally relaxes rules until a feasible solution can be found. Rules are not replaced in the instant invention. Rules are relaxed on an incremental basis until higher priority rules become feasible. Even if the schedules disclosed in Damian '791 could be considered to be rules, there is no teaching of relaxing schedules on an incremental basis until a working schedule is found. Rather, parent schedules are eliminated and replaced with child schedules. The process of relaxing rules incrementally only to the point where a solution is allowed is not disclosed nor suggested.

Specific support can be found on page 124, lines 12-13 of the specification, "In the preferred embodiment the lower priority rules are checked before higher priority rules. If it is found that rules with lower priorities than that priority of the LPI rule may be relaxed to a point that allows the LPI rule to become feasible, then these rules with lower priorities are relaxed incrementally so that the LPI rule becomes feasible (step 2120)". A detailed example of the use of this novel incremental relaxation technique is provided on pages 124 and 125. Damian '791 does not teach nor suggest the claimed invention and hence Claims 4, 10, 13, and 19 are allowable over the cited references.

As noted above, Damian '791 relates to production scheduling and "more particularly to a technique for employing a knowledge base system to dynamically schedule production of parts on a plurality of manufacturing machines." (Col. 1, lines 11 – 14). In particular, the invention is "a method for operating a computer system to generate schedules for a plurality of orders." (Col 2, lines 23 – 24; and Col. 107, lines 37 – 38). Damian '791 is unrelated to the price optimization systems of the instant invention and is thereby non-analogous art.

Only references from arts analogous to that of the claimed invention may comprise prior art to the invention. A reference will be analogous art if: 1) it is from the same field of endeavor as the claimed invention; or 2) it is from a different field of endeavor, but the reference is reasonably pertinent to the particular problem solved by the inventor. *In re Oetiker,* 977 F.2d 1443, 1446–47.

The field of endeavor of the instant invention concerns price optimization in an enterprise pricing environment. In particular, the instant invention relates to providing optimized prices for a plurality of products and stores. (See specification, page 2, lines 16 – 17). The cited art relates to production scheduling. The stated field relates to "a technique for employing a knowledge base system to dynamically schedule production of parts[.]" (Col. 1, lines 10 – 13).

Not only is Damian '791 from an unrelated field of endeavor, but it is not pertinent to the problem solved by the instant invention. The instant invention provides the advantage of allowing a user to optimize prices within the context of selected business rules. (See specification, page 123, lines 12 – 14). The invention allows the user to relax lower priority rules incrementally in order to

optimize pricing when optimization is otherwise infeasible. This solves the problem of having optimized prices which are infeasible given the chosen rules by optimizing the process of rule relaxation to produce a feasible result. Damain '791, on the other hand, relates to making scheduling adjustments given "operational constraints due to the nature of the equipment." (Col. 1, lines 67 – 68).

Since Damian '791 is non-analogous art, it is not available as prior art over the instant invention. As such, Claims 4, 10, 13 and 19 are allowable as amended.

Even if Damian '791 were analogous art, the instant invention would be allowable over Damian '791 in conjunction with Ouimet '641. Claims 4, 10, 13 and 19 have been amended to recite:

"incrementally relaxing at least one rule with a lower priority than the priority of the rule determined to be the lowest priority infeasible rule to allow the rule determined to be the lowest priority infeasible rule to become feasible, wherein incrementally relaxing said at least one rule comprises:

prioritizing each said at least one rule with a lower priority than the priority of the rule determined to be the lowest priority infeasible rule; and

sequentially relaxing in order of priority from lowest priority to highest priority each said at least one rule with a lower priority than the priority of the rule determined to be the lowest priority infeasible rule to a point that allows said lowest priority infeasible rule to become feasible, wherein each said rule is relaxed incrementally in sequence until said point is reached" (emphasis added).

The instant invention provides the advantage of allowing the user to set the priority for the rules (specification, page 125, lines 2 – 4), and to relax the lowest priority rules incrementally in order to achieve feasibility in the price optimization scheme. (specification, page 125, lines 14 – 16). Price optimization in the context of complex business rules may lead to situations where some of the

rules may be infeasible. By finding <u>the lowest priority infeasible rule</u>, and incrementally relaxing rules with a lower priority until feasibility is achieved, the instant invention provides the advantage of optimizing the rule relaxation process by finding a feasible solution while retaining as many of the rules as is possible.

Damain '791, on the other hand, eschews optimization in favor of finding the first acceptable solution. "[T]his program does not have an optimum schedule criteria, therefore it is picking the first acceptable schedule." (Col 10, lines 64 – 66). Rules are not relaxed in a manner which would optimize scheduling, but rather "the goal then generally is to find a feasible schedule or schedules which meet the constraints[.]" (Col. 5, lines 2 – 4). Furthermore, Damain '791 does not allow the user to set the priority of the rules, but only allows the user to relax constraints in set hierarchies until a feasible schedule is found. While Damian '791 discloses a process of replacing an unworkable parent schedule with a child schedule (Col. 10, lines 5 – 8), there is no discussion of finding a <u>lowest priority infeasible rule, and incrementally relaxing lower priority feasible rules until said infeasible rule becomes feasible.</u> As such, Claims 4, 10, 13 and 19 are allowable as amended.

The Examiner has also rejected Claims 5-9 and 14-18 under 35 U.S.C. 103(a) as being unpatentable over Damian et al. (5,212,791) as applied to claim 1 above, and further in view of Ouimet et al., (US 6,094,641), and further in view of Ouimet et al. (6,308,162). In light of the amendments to Claims 1 and 11 outlined above, dependent Claims 5 – 9 and 14 – 18 are believed to be allowable for at least the same reasons as those discussed above.

In sum, base claims 1 and 11 have been amended and are now believed to be allowable. Dependent claims 2, 4, 10, 12, 13, and 19 have been amended and are now believed to be allowable. Dependent claims 3, 5 – 9, and 14 - 18 which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent claims 1 and 11 for at least the same reasons. Hence, Examiner's rejection of dependent claims is rendered moot in view of the amendment to independent Claims 1 and 11. No new claims have been added. Claim 20 has been previously canceled without prejudice or disclaimer of the subject matter therein. Applicants believe that all pending claims 1 - 19 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Applicants hereby petition for a two-month extension of time within which to respond to the referenced Office Action. Enclosed is a Credit Card Payment Form authorizing the Examiner to charge the RCE fee and the two-month extension of time fee. The commissioner is authorized to charge any additional fees that may be due or credit any overpayment to our Deposit Account No. 50-2766 (Order No. DEM1P007). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

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